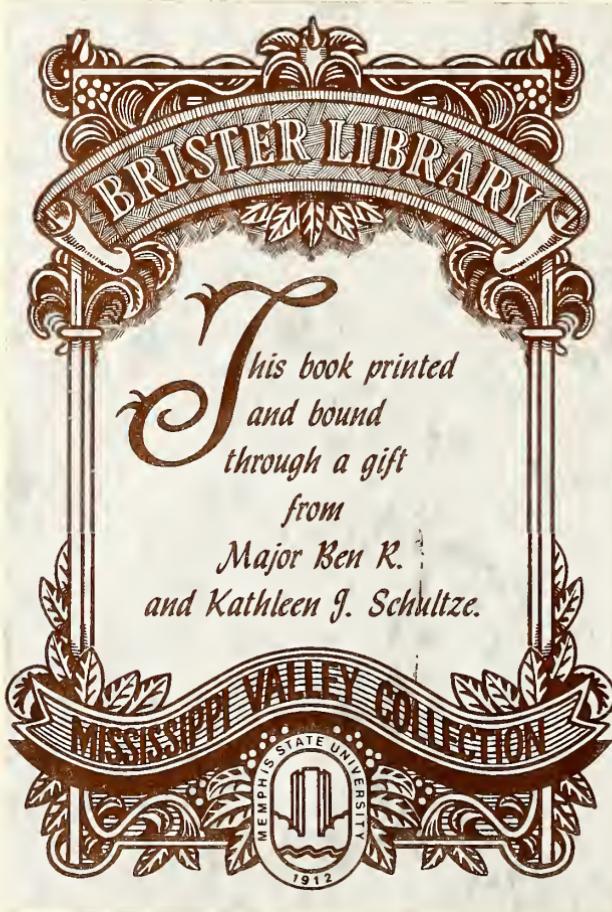


ORAL HISTORY OF THE TENNESSEE VALLEY AUTHORITY  
INTERVIEWS WITH  
JOHN P. FERRIS

BY - CHARLES W. CRAWFORD  
ORAL HISTORY RESEARCH OFFICE  
MEMPHIS STATE UNIVERSITY



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ORAL HISTORY OF THE TENNESSEE VALLEY AUTHORITY


INTERVIEWS WITH JOHN P. FERRIS

DECEMBER 7, 1969

BY CHARLES W. CRAWFORD

ORAL HISTORY RESEARCH OFFICE

MEMPHIS STATE UNIVERSITY



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PLACE Cherry Chase, Md.

DATE Dec. 7, 1967.

John P. Ferris  
(Interviewee) John P. Ferris

Charles W. Crawford  
(For the Mississippi Valley Archives  
of the John Willard Brister Library  
of Memphis State University)



THIS IS MEMPHIS STATE UNIVERSITY ORAL HISTORY RESEARCH OFFICE PROJECT, AN ORAL HISTORY OF THE TENNESSEE VALLEY AUTHORITY. THE DATE IS DECEMBER 7, 1969. THE PLACE IS CHEVY CHASE, MARYLAND. THE INTERVIEW IS WITH MR. JOHN P. FERRIS, FORMERLY WITH THE TENNESSEE VALLEY AUTHORITY, AND THE INTERVIEWER IS DR. CHARLES W. CRAWFORD, DIRECTOR OF THE ORAL HISTORY RESEARCH OFFICE AT MEMPHIS STATE UNIVERSITY. THIS IS INTERVIEW NUMBER ONE.

DR. CRAWFORD: Mr. Ferris, I suggest that we start by getting a survey of your early life, your education, and background before your joining the Tennessee Valley Authority.

MR. FERRIS: I was born in Philadelphia, Pennsylvania, May 9, 1898.

DR. CRAWFORD: And where did you live early in life? Where did you receive your education?

MR. FERRIS: In Wisconsin, primarily. My family and I moved out to Wisconsin when I was four years old. I was raised in Milwaukee. However, my parents were from Philadelphia and somehow decided to send me back to Swarthmore College before World War I. I went back there for a couple of years. My father was a mechanical engineer, and it seemed to me that any sensible person would want to be a mechanical engineer. So I started working with my hands, primarily as a sort of apprentice machinist in shops in Milwaukee, partly under his supervision. Then I went to the Army in World War I and spent a year and a half, most of it in France. Some of the time I was in mechanical work again. I came back and started working in the shops again instead of going back to school because my father was engaged in starting a new company and needed cheap manpower. I'm not sure how competent I was, but anyway, I had the idea that perhaps I'd had all the education



MR. FERRIS: I needed. (I've learned better since, of course.) But ultimately (Cont'd.)

I went back to the University of Wisconsin and persuaded them to let me concentrate in one year some of the engineering courses that I felt I needed to get by in my new work.

DR. CRAWFORD: Was that mechanical engineering?

MR. FERRIS: Yes. There was a small syndicate of investors doing the preliminary work in developing pumps, motors, valves, and so on for a system of hydraulic power transmission which later became the basis of a new forty-eight year old company in Milwaukee --the Oilgear Company.

DR. CRAWFORD: Approximately what year was that?

MR. FERRIS: Well, I did some work there just before I enlisted in the army, and then in 1919 and '20, I worked about two years for this preliminary organization. It was experimental work. We designed new machines.

DR. CRAWFORD: What year did you return to the University of Wisconsin? Was that before '20 or after?

MR. FERRIS: It was after that. It was 1920 or '21.

DR. CRAWFORD: Where did you work throughout the twenties, Mr. Ferris?

MR. FERRIS: Well, after my single-year special engineering course at the University of Wisconsin I took a job with the Oilgear Company, which was then incorporated, and for the next eight years I worked in experimental work, developing new machines, designing new machines, finding people who would buy them, helping the salesmen and so on, working out new uses. I ultimately became Assistant Chief Engineer and then Chief Engineer of the Oilgear Company in Milwaukee.

DR. CRAWFORD: How large was the company at that time?



MR. FERRIS: Oh, at the time I left in 1932, the company had, perhaps, 150 employees.

DR. CRAWFORD: In 1932? Were you acquainted, at that time, with any of the people who later were active in TVA?

MR. FERRIS: No, This whole business was an engineering adventury. In many ways it was extremely satisfactory for me, but, towards the end I began to be unhappy because of the fact that it seemed that the world had plenty of machinery already. What people ought to be more interested in was what you do with machinery and how you solve the big problems of society that are so obvious now and were even obvious in the twenties. I had been writing about that some.

DR. CRAWFORD: What had you been writing? Where had you been publishing it?

MR. FERRIS: Well, my first effort was a speech, which later became an article in the April, 1932, Mechanical Engineering called "Research for Industrial Pioneering." John Gaus, recently at Harvard, then at the University of Wisconsin, saw it. He was helping Governor LaFollette fix up a State Executive Council--a sort of "third house" of the Wisconsin legislature--which the Governor tried as an experiment. Gaus recommended that the Business Economics Committee hire me as its secretary--the Business Economics Committee of the Executive Council. Governor LaFollette did so, and out of a clear sky I was offered the opportunity to try myself out in public service, which I siezed upon and took a leave of absence. I went up to Madison and spent a fascinating year.

DR. CRAWFORD: Was that '32?

MR. FERRIS: '32 and '33. Governor LaFollette was ultimately defeated in a landslide because of a man named Franklin Delano Roosevelt. He wasn't running for Governor of Wisconsin, but a Democrat was running, who won, and the whole



MR. FERRIS: Executive Council idea was soon dismantled, and my job was  
(Cont'd.)  
abolished.

DR. CRAWFORD: What size was the Executive Council? With what people did you  
associate in that work?

MR. FERRIS: Well, I associated mainly with two men. One was John Gaus, a  
professor of political science who was secretary of the Council and  
served half-time there and half-time with the political science department  
of the University of Wisconsin; and Robert Goodman, a businessman of vision  
who had no official capacity, as I recall, though he was really a "thinking"  
source for the Governor on the Executive Council. He spent enormously of  
his energy and devotion trying to help tackle the problems of Wisconsin--  
land use (20% of the land was tax delinquent); forests cut over--millions  
of acres; enormous unemployment. All of these things, and then finally in  
1933, the attempt to gear-in with Roosevelt's new New Deal program in such a  
way that the State on-going programs could draw on federal resources and  
back up the federal programs. I was Secretary first of the Business Economics  
Committee, which was supposed to help the Governor tap the know-how of the  
business community, and then ultimately they made me Secretary of the Land  
Use Committee also, and it all gave me an interest in public administration.  
Of course, as you probably know, John Gaus ultimately became one of the  
leading thinkers in public administration in our country. He went back  
to the University of Chicago and Harvard. And with almost no background, I  
got plunged into public administration in a way that was very interesting  
but extremely precarious.

DR. CRAWFORD: Did you maintain your contact with him later?



MR. FERRIS: Yes. I corresponded with him for many, many years. He came down to see me in TVA years later.

DR. CRAWFORD: When did this interest in public problems develop? Was it in the twenties when you were working for the Oilgear Company?

MR. FERRIS: Well, in the form of discontent, yes. In the form of discontent because I was just devoting myself to making more and more machines. But the general idea that began to form in my mind was that public research could play a leadership role in tackling problems which had quit being linked so closely, solely, to the what you might call "the commercial interests of the manufacturing businesses" and that would look at society as a whole and pick out big problems to work on.

DR. CRAWFORD: Do you believe that kind of step was ahead of its time in the twenties?

MR. FERRIS: Not altogether. There were a number of people thinking of it in general. For instance, Ralph Flanders, who ultimately became a U. S. Senator from Vermont or New Hampshire, was writing books on general subjects pertaining to "taming our machines." I was in correspondence with him. There were others, of course, a lot of people in the liberal groups. Stuart Chase, Ralph Borsodi (he was on the handi-craft fringe of the economic liberals). But certainly some businessmen were thinking in these terms. Ralph Flanders was the president of a machine tool manufacturing company in New England, and ultimately became President of the American Society for Mechanical Engineers and a U. S. Senator.

DR. CRAWFORD: I believe that your company was also successful in the twenties. Was it still prospering in '32, when you left?



MR. FERRIS: Yes, it was fairly prosperous. It was scared by the depression, as all companies were, but it never got into the hands of the bankers. It maintained its independence, and it is now highly prosperous 48 years later.

DR. CRAWFORD: Did you maintain any interest in the company after leaving?

MR. FERRIS: I bought stock with what little savings I had. My leave of absence was extended in 1933, when the State Executive Council, which employed me, collapsed. The Oilgear Company then asked me to come back, but I didn't.

DR. CRAWFORD: At that time, then, you were interested in public problems and had some experience. How did you happen to become associated with TVA?

MR. FERRIS: Two things. I picked up a copy of the Chicago Tribune one morning and read that a thing called the Tennessee Valley Authority was a part of the New Deal program and that it was perhaps going to be interested in industrial de-centralization. Well, my work for the Business Economics Committee of the State Executive Council had gotten me into that line of thought a little bit. Robert Goodman, a businessman whom I mentioned, and who was Phil LaFollette's mentor on the business side, figured that there was no solution for this kind of problem unless there could be more and more centers of employment spotted around through the state. He argued in favor of the idea of industrial de-centralization with considerable cogency, and I picked that up. Actually, I was in charge of a study of de-centralization in Wisconsin that was carried out by the personnel of the graduate school of the University. So I thought that perhaps that idea might really blossom in the Tennessee Valley Project. Second, David E. Lilienthal, whom I knew somewhat in Wisconsin, had just been appointed a Director of the TVA. So I sounded him out as to the possibility that TVA might want me.



DR. CRAWFORD: Was that in the summer of 1933?

MR. FERRIS: Spring of summer.

DR. CRAWFORD: Was David Lilienthal still in Wisconsin?

MR. FERRIS: Yes, he was in and out between Madison and Knoxville--along in there. I don't remember just when he finally left Madison, but he resigned from the Wisconsin Public Service Commission. What he did was simply to say that, "Dr. Harcourt Morgan of the University of Tennessee, my colleague and another director, is going to be in charge of agriculture and small industries work. Go and see him." Which I did.

DR. CRAWFORD: Was that your first trip to Tennessee?

MR. FERRIS: The first time I ever saw the South. No, it wasn't! I was in the South as a soldier in World War I, but it was the first time since then. I went to Knoxville early in July of '33. I met and was tremendously impressed by Dr. H. A. Morgan.

DR. CRAWFORD: Do you remember when that was in 1933?

MR. FERRIS: I think it was about the first of July. He was in his office as President of the University of Tennessee. He seemed very friendly, perceptive, clearly an idealist.

DR. CRAWFORD: Only that the Chamber of Commerce in Knoxville had lent Dr. H. A. an office, which as I recall, he never sat in, or didn't sit in much. He stayed in his office in the University most of the time.

DR. CRAWFORD: Were you familiar with his thinking--his ideas--on development before that time?

MR. FERRIS: No, I knew nothing about him. It was a completely new experience to me as I met him in his office at the University of Tennessee.



DR. CRAWFORD: After that meeting I assume you returned to Wisconsin and made preparations to go to Tennessee.

MR. FERRIS: That's right.

DR. CRAWFORD: When did you move permanently, or at least for the job, to Tennessee?

MR. FERRIS: I reported for duty on August 1, 1933, and my family followed me as soon as I could rent a house and they could make the necessary arrangements.

DR. CRAWFORD: About what time was that, sir?

MR. FERRIS: I think it was near the end of August.

DR. CRAWFORD: You were there for only a short time before they did go to Tennessee. Do you remember meeting Dudley Dawson?

MR. FERRIS: Oh, yes, very well. I don't think I met him until after that time, though. He was working under A. E. Morgan, and I would say that it was two or three months later before I actually met him, but the Dawsons ultimately became our neighbors in Norris, and we knew them quite well.

DR. CRAWFORD: Why did you decide to live in Norris rather than Knoxville?

MR. FERRIS: Well, I didn't at first. I decided to live in Fountain City, because I could get housing for \$45.00 a month, and I was being paid, as I recall it, \$4,500.00, before the Roosevelt pay cut.

DR. CRAWFORD: How did you deal with the TVA pay scale at the beginning?

MR. FERRIS: I didn't think much about it. The big decision was this: was the family going to undertake to adjust itself to an entirely new environment that they knew nothing about and a new job that had not been defined-- hadn't been crystallized yet. There were two small children to bring up. My wife was facing all the problems that go with transplantation. Those were the things I was thinking about and how to make some kind of



MR. FERRIS: contribution that was worth the effort and worth the risk. One (Cont'd.)

of the early things that H. A. did was to make it clear that it was very fundamental with him that the program of TVA could only succeed if it had very real participation--not just acquiescence--from the people of the Valley. That implied that their institutions, with the land-grant colleges out in front--but all institutions--had to be involved deeply. The universities were among those institutions, and you couldn't possibly expect to get really deep and effortful participation if the federal government brought in a bunch of foreigners with fancy salaries. That would create a schism between TVA and the universities, and the only way to start was to see that they didn't bring in a bunch of foreigners with fancy salaries. The salary scales would have to be somewhat comparable with those at the university, which were pretty low. So, H. A. made it clear that that was his thought. I will admit that it was entirely clear and reasonable, although I would have preferred to get more than \$4,500 a year.

DR. CRAWFORD: What were your first impressions of the area and the problems that you faced?

MR. FERRIS: Well, my first impression was that the place was naturally beautiful and terribly run-down. The industrial slums of Knoxville were unspeakable. Later I began to realize that they were better than the built-up slums of Chicago or Harlem, but nevertheless, they were terribly depressing. The evidences of tough going, economically, were all around us and pervasive. There wasn't one farmhouse in twenty that had had a coat of paint in the last ten years or twenty years. A high percentage of the hilly farm fields were gullied and eroded, and the place was in a real life-and-death struggle with the alternatives of going up or going down.



MR. FERRIS: Many people were somehow optimistic that the TVA would bring some (Cont'd.) kind of magic, they knew not what, that would be helpful.

DR. CRAWFORD: What did you consider the basic causes of this economic situation in the Valley?

MR. FERRIS: Well, I never aspired to sufficient knowledge of economics and history to attempt any diagnosis of my own, but I quickly learned that Dr. H. A. Morgan had his thoughts in very good order on that subject. One of the first things he wanted to be sure of was that we understood the situation that TVA faced.

The Valley region had a history that grew out of many things, including the terribly destructiveness of the cotton system in the western and southern part of the Valley, and corn on hillsides and so on, but of cotton particularly. It had created this situation which was destructive of land, and therefore, of the rural society dependent on it. The changes that had just begun to come before the Civil War were snuffed out by the disaster of the Civil War, and the South was forced to go on doing again what it was just finding out was wrong, and to push every acre into cotton that it could because cotton was a marketable commodity and it didn't rot when you stored it in a warehouse for six or eight months. So the whole cycle of cotton and the Civil War was one of the basic causes of the Valley's economic situation that Dr. H. A. had drummed into my head. Then, of course, he went into the lack of access to markets in the hills--the eastern part of the Valley--and the somewhat similar disaster of the corn system on hillsides, and the weakness of the economic base leading to the weakness of the educational institutions and so on. It was a perspective of the economic history of the South which seemed to me reasonable and logical. So I took it from him.



MR. FERRIS: I didn't feel that I could contribute much in the way of thinking (Cont'd.) about the basic causes.

DR. CRAWFORD: Did your later experience convince you that his analysis was correct?

MR. FERRIS: It convinced me that he was correct enough, so that you would say that he had hold of one of the basic causes--some of the basic causes-- and that he was right and wise to play them up as if they were the only causes, whereas there may have been some other causes.

DR. CRAWFORD: Do you think that he succeeded in communicating this problem to the people of the area?

MR. FERRIS: Remarkably well, but not enough, really to do the job. In other words, he had a magic in his presentation that would amaze on in the way that he would get rock-ribbed, hard-skinned businessmen into Sunday School and church in Knoxville and drum these facts and aspirations into their heads and make them like it. This was one of the most amazing things of my acquaintance with him. But nevertheless, the facts were, of course, that at the end of my eighteen years the Valley was still struggling with a lot of these problems and there were still strong centers of opinion and propaganda fighting the ideas that H. A. stood for. It didn't completely solve the problem, but it was an amazing effort to communicate, and worked remarkably well. He got the land-grant college presidents to stand up for the general theory of the economic problems of the rural South in their joint relationship with the U. S. Department of Agriculture. I think it was primarily the work of one man--H. A. Morgan. Now, they didn't always stick with him, but it was quite a team that he organized.

DR. CRAWFORD: Do you believe that it was wise to have one committee member--one Board member--appointed from the area?



MR. FERRIS: Oh, by all means.

DR. CRAWFORD: And do you think he was well-selected to represent the region to TVA and TVA to the region?

MR. FERRIS: Oh, yes. Of course, he was such a unique person that I find it difficult to think in terms of your question, "Was it well to have a man from the area?" He was from the area; he was a man; he did the job that needed to be done; and therefore, it was wise for the President to have selected a man from the area. But the point was that I'm sure he was one of America's great prophets of agriculture and of rural life. I very frankly doubt that Franklin Roosevelt knew what H. A. was like when he was appointed. H. A. had much more to contribute than Roosevelt ever knew at the time he appointed him.

DR. CRAWFORD: Why, do you feel, that he was a person of such stature?

MR. FERRIS: Well, he had a great ability to project himself into the problems, the emotions, the thinking of some millions of people in an imaginative way. As far as I could tell, his ambitions were limited to service, to his ideas, and to the people that he represented. There was always in infinite patience in the man, and a complete dedication. He had remarkable insight, although he was not an intellectual giant.

DR. CRAWFORD: I was particularly anxious to get this information about him, since he is the only original Board member who, of course, can't be interviewed in this series.

MR. FERRIS: Well, there are other things. One of the contributions that I feel confident that he made--that he was a great man--was his affect on Dave Lilienthal. Dave Lilienthal was a more brilliant man by far. Lilienthal had along with considerable humility, great confidence in his own analyses of



MR. FERRIS: problems in the Valley. Yet, after a few years, you could see that (Cont'd.)

Dave was increasingly influenced by the vision of the Valley and its problems and the life of its people and by the aspirations of H. A. Morgan. In Dave's book, Democracy on the March, you recognize none of the verbiage of H. A. Morgan, but you see some of the affects of H. A.'s fundamental drives. And I've heard Dave say that H. A. was one of the noblest men that he ever knew.

DR. CRAWFORD: I believe that I have noticed these ideas that you suggest in Dave Lilienthal's book.

MR. FERRIS: You have? You don't see any quotes. You don't see any specific language that exactly reflects the words of H. A. Morgan--very little--but much of it is there. I knew Dave before he went to the Valley, and I'm quite sure that Dave is a different man from the man he would have been.

DR. CRAWFORD: Many of the TVA personnel--many of the TVA managers--in the early period, were from outside the region. Do you think that their ideas were influenced in large part by H. A. Morgan as to what the problems were and how to deal with them? He apparently affected Dave Lilienthal.

MR. FERRIS: Yes. And ultimately he affected Clarence Blee as Chief Engineer. That was many, many years later, though. That was, I guess, during the War years. I think this is a good time for me to take a break.

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THIS IS INTERVIEW NUMBER TWO WITH MR. JOHN P. FERRIS, DECEMBER 7, 1969.

MR. FERRIS: I have some notes that I could refer to to avoid skipping detail, but I would imagine that you would rather have me just talk from memory.

DR. CRAWFORD: No, sir, I don't mind your using notes. I want to rely on what you remember about this, but you may use any notes you wish to refresh your memory. In fact, if you have notes, I'll be glad to have you use them.

MR. FERRIS: Okay, I'll keep them handy. So far the problem hasn't come up. I have remembered the things that you have asked.

DR. CRAWFORD: When you arrived at TVA, Mr. Ferris, what positions were you given, and what were your initial responsibilities?

MR. FERRIS: First, let me say that there was a general vagueness about the problem of organization, certainly under H. A. Morgan. He didn't want to be in a hurry to establish clear-cut lines. Nevertheless, I was called Industrial Surveyor. There had to be some kind of a decision made as to what I was. H. A. Morgan, as his very first assignment, said, "You and George Rommel get in a car. Run on up to Bristol and then come back by way of Chattanooga. I'll give you a series of introductions to some people in industrial plants. You go in and just talk to them. You don't know a thing about what makes this Valley tick, and you'll know at least something after you get through a trip like this." And we did.

DR. CRAWFORD: How long did that trip take?

MR. FERRIS: Oh, three, four, or five days, but it was an introduction into the nature of the world we were to work in. H. A. Morgan very early got me to try to write a paper which would state a philosophical basis for the place of small industries in the future development of the Valley.

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MR. FERRIS: Statement after statement. He wrote many statements himself, And (Cont'd.)

then pretty soon he became aware that in order to do his job with TVA, he was going to have to have some people next to him whom he knew well. So he raided the University of Tennessee, and he stole, or borrowed, Willis R. Woolrich, in engineering, and J. C. McAmis, both of whom had played leading roles in conferences on industry and agriculture that Dr. H. A. had had the University sponsor. He knew them both well and thought highly of them.

So he called me and said, "Woolrich is your boss from now on." I said, "Fine." Woolrich had been very helpful to me in trying to understand the problems that the TVA was facing in the small industries field. So, pretty soon I was under Woolrich, who headed the small industries work, in a vague way without any clear definition of what it consisted of. In the same way, Rommel, who also came to Knoxville about the same time I did, was under McAmis. That was really the beginning of the organization in Dr. H. A.'s area, other than for Muscle Shoals and fertilizer. I can't remember how far along Dr. H. A. was in finding Dr. Curtis and putting him to work, but the work that was going on under H. A. Morgan in the early weeks of TVA consisted primarily of three parts: the fertilizer activities, centering in Muscle Shoals and Knoxville (he had work going on there); his agriculture program, under McAmis; and his industry program under Woolrich.

Woolrich was research-minded, and he had already had some young men in the University of Tennessee College of Engineering working on things that conceivably might develop as a basis for local industry. Among them were refrigeration for small, walk-in coolers to be used in holding meat, such as hogs slaughtered at hog-killing time, in the late fall; and he had work underway for improved processes for preparing cotton seed for the extraction



MR. FERRIS: process to get cotton-seed oil out of the seeds more efficiently.  
(Cont'd.)

He had men working, as I recall, on small feed grinders that might conceivably be made in small plants in the Valley, and be electrically powered, in an electrification program that would enable the farmer to grind his own feed instead of buying it at higher cost in a sack down at the country store, and so on. There were several things of that sort, and Woolrich early planned to expand those activities, with the unexpressed thought that they were the soundest way of building a base for small industry. Also, they avoided "Chamber of Commecism;" H. A. Morgan thought this was poison, both theoretically and practically.

Woolrich operated these research projects on his own, and he had me as a sort of handy-man to do everything else relating to small industries. This consisted of planning ahead for the time when we could get technical ideas for larger-scaled enterprises far enough along to turn over to local businesses. Things like improved cotton-seed cookers; things like manufacturing the feed-grinders; things like building the trailer thresher, which ultimately was made by a company in Statesville, North Carolina.

Then there were attempts made to envisage ways of organization to encourage small businesses. One of the early things I did was to make a study of the G. L. F. Corporation, centering in Ithaca, New York, which had been remarkably successful in fostering small farm cooperatives in the feed, seed, and fertilizer business. Now, in the remarkable organizational structure that they had built in the Northeast, which combined good management of the cooperatives and sound business practices with democracy, the component organizations were free to run their own shows, pretty much. I made a study of the G. L. F. and reported back to Woolrich and H. A. Morgan.



MR. FERRIS: Then before I get too deeply into other details, I should say that  
(Cont'd.)

one of H. A.'s ways of doing business was to rely not only on concrete assignments, but to run what I have sometimes called in my own mind a "side show." He was forever trying to think out ways of stating his philosophy and how TVA's programs could fit into it. The way he operated was to call people in and say, "I want you to come to my office. I've got something that I want to show you." Then he would have a paper full of scrawls and say, "Now, what do you think of this?" Then the first thing you would know, you would go out of his office with instructions to do it differently and bring it back to him, without any reference to the organizational lines of TVA. Now, he managed that very, very skillfully so that he never got into trouble with people who carried specific administrative responsibility, like Woolrich and McAmis, or Bass. He would call me in, and many others--Mac Landless in agriculture, for instance. I suppose over the years I must have written 60 or 80 papers for him, or re-written things that he had written, and so on. It was a sort of vague groping to clarify ideas, thinking, plans, and proposals without any reference to the organizational lines of TVA. He would ultimately find people maybe working in some other part of TVA that wasn't under him at all, and call them in, Clarence Blee, for instance.

I just wanted to mention this early, because, after all, it took a good deal of time. And in the early, groping days of TVA, a lot of us spent a good deal of time just doing and re-doing "think pieces" for H. A. Morgan.

DR. CRAWFORD: What do you think the advantages of such a procedure were?

MR. FERRIS: Oh, considering H. A. Morgan's way of thinking and the kind of man he was, it was a thoroughly wholesome and healthy thing, and it kept the organization from crystallizing into arbitrary patterns when the over-all



MR. FERRIS: job of the organization was so indelible that arbitrary patterns (Cont'd.)

would have bogged down into sterile bureaucracy. It kept bureaucracy from developing as it otherwise would have.

DR. CRAWFORD: Did it keep individual administrators familiar with the work of other people--the whole picture?

MR. FERRIS: It did within the orbit of this thinking--the "common mooring" concept. The role of plant foods in the rural economy of the area; the roles of the land-grant institutions; the roles of the Chambers of Commerce; the roles of business vs. agriculture. All of these things that were implicit in the vague concept that he had in his mind for the Valley became realities; in the minds of a lot of people in the organization; whereas, it couldn't have happened if he had behaved in a more orthodox way administratively. Of course, we all loved him.

DR. CRAWFORD: Did you consider that an affective administrative method at the time?

MR. FERRIS: Yes, but I can't say that I would recommend it to some other administrative leader or some other organization under other conditions. My appraisal of it gets back to H. A. as a man. I don't know how you would apply it to other situations.

DR. CRAWFORD: Did you consider him an administrator of exceptional ability?

MR. FERRIS: In the terms that you ask the question, I would have to say no. I considered him more as a great inspirer of men.

DR. CRAWFORD: Well, that's a very hard thing to say. Toward the end of one's life, where did one pick up the things that are important to one? Much of it from H. A. Morgan. I learned, I think fundamentally, that man has no future until he begins to weave his activities better into the fundamental processes of nature. It's gotten to be a style now, under the heading "ecology."



MR. FERRIS: But H. A. Morgan thought of it long years ago and implanted it (Cont'd.) more specifically in the minds of those of us who worked closely with him.

I must say that I think that H. A.'s view of the role of man in the pattern of life is the greatest thing I learned.

DR. CRAWFORD: Do you think that TVA was a pioneer organization in developing this idea? Not just conservation, but development of resources and fitting human activity into natural patterns?

MR. FERRIS: It certainly was. It was never clearly enunciated or logically worked out and recorded, but the fact is that a high percentage of the things that TVA did--not all of them, but a high percentage of them--could ultimately have been said to have advanced the basic principle. The idea of ecology is a necessity. The ecological approach is a necessity in developing a good life in any given area of the world.

DR. CRAWFORD: This is a hypothetical question, but do you suppose that if the TVA idea of dealing with things ecologically had been applied to the nation as a whole, that a lot of the present-day problems would not be what they are?

MR. FERRIS: I am a little inclined to say that I can't answer that question except to say that it seems to me that the human animal is unimaginative enough in this field so that the TVA pattern couldn't have been applied nationwide. But it had to start somewhere, in a more limited area, creating an experience that could be analyzed, publicized, and interpreted and so on. It's a problem of such titanic complexity and magnitude that there are not enough competence and human talents for political and technical organization to have carried it out in a nation-wide area in a clean-cut way. There had to be something like TVA where you had a sort of a laboratory where you worked with it on a more limited scale.



DR. CRAWFORD: Do you think the Tennessee Valley was well-chosen as the location for this laboratory?

MR. FERRIS: Yes. I never have been able to understand fully the national resistance to expansion--to trying to apply the same principles in the Missouri Valley or somewhere else--more fully. But I think that one of the main reasons that the TVA region was well-chosen is that ideas like H. A.'s ideas never sell and take hold and expand unless they are linked to concrete things that you can feel and see and take pictures of. Well, it just so happens that building a lot of big dams in a river to get it under control is such a thing, and the Muscle Shoals plant is such a thing. But the TVA combined in a unique way a broad approach to helping people build better lives with a lot of very down-to-earth tangible things that you can count statistically and classify, and which create certain benefits that people can feel in their own pocketbooks, like lower electric bills, et., and the contributions to the World War II expansion of aluminum production, the enormous increase in the river traffic, bringing in mid-west grains into chicken farmers, getting these grains in through the ports on the Tennessee--Guntersville--and so forth. We needed a combination of an evolving vision of what life ought to be with the down-to-earth things that unimaginative people can understand and feel and benefit by. This was an essential combination, and if TVA had tried to do the first without the second, it would have been thrown into the dust-bin of history long ago.

DR. CRAWFORD: This is getting ahead of our interview, I suppose, but do you feel this was a weakness in Arthur Morgan's thinking, not vision, but as a matter of selling it or presenting it to ordinary people?

MR. FERRIS: Yes, I think there was a basic philosophical weakness that he was never conscious of that cursed his approach right from the beginning and,



MR. FERRIS: because of it, Dave and H. A. teamed up against him--well, they (Cont'd.)

didn't team up against him; they teamed up for the things that he was against.

They both proceeded from the assumption that people, as Thomas Jefferson considered them, have enough intelligence, enough good sense, and rights which add up to a situation in which you've got to trust them to do things. And if they were doing a very bad job, as they were, let's say, in the cotton belt of the western and southern valley, if you give them the right tools, and the better tools, they'll do better. They will chart the course, and they will use the facilities that they need to build a better life. A. E. Morgan had a different idea. A. E. had the idea that there are certain people who have inspiration and understanding, and the problem is to get the mass of humans to follow these leaders' wisdom. That if they don't follow it, they're just plain wrong and stupid. He wouldn't have said that, but I think that was the underlying assumption.

Well, A. E. Morgan and that philosophy, of course, immediately clashed with Harcourt Morgan, in the first place, and then with Dave Lilienthal; and then with a lot of the rest of us; and then with the mass of humanity. The mass of humanity in this country just doesn't think that way. He bumped against that fact and, of course, he couldn't sell his approach. If you start with that inner outlook towards the human race, you can't succeed.

DR. CRAWFORD: But Harcourt Morgan did understand that well?

MR. FERRIS: He understood it very well. That was one of his basic contributions to the philosophy that meant the difference between TVA's being here now and its not being here.

DR. CRAWFORD: Where did Harcourt Morgan do his most effective work of representing TVA to the public opinion? Did he do it in the Valley? Did he do it to



DR. CRAWFORD: people outside? Did he do it through his speeches, his publications, (Cont'd.)  
or in what way?

MR. FERRIS: Well, I would think the most important contributions he made were personal and almost invisible; his influence on Dave Lilienthal and Clarence Blee, on the president of the University of Kentucky and so on. There were key people around whom he dealt with and influenced, as his greatest contribution. That's my personal opinion. In a Congressional hearing he wasn't anywhere near as good as Dave Lilienthal. I never heard him in a congressional hearing, but I think he did well sometimes. However, it seems to me that, clearly, he was one of those men who work primarily behind the scenes, influencing individuals in the TVA organization, but particularly others in the key places in the Valley: Presidents of universities, Deans of agriculture, Directors of engineering experiment stations, Directors of business corporations and so on.

DR. CRAWFORD: Did you feel that TVA was adequately accepted by the people in the region?

MR. FERRIS: Well, there was always a mixed picture, but every once in a while something happened that made you see that there was magic in the approach. Early the Supreme Court decision upholding the TVA's right to market surplus power gave us a huge lift. If we could persuade the Supreme Court Justices, we couldn't be all wrong. And then along came other attacks on the power system, which I have forgotten. All of a sudden eighty or ninety Chambers of Commerce would join in a petition to some committee in Congress, "Don't demolish the power system," and so on. Then there were the great battles with the Department of Agriculture in which they wanted to make



MR. FERRIS: the main agricultural policy decisions for Valley farmers in Washington (Cont'd.)

and then have the people of the Valley immediately say, "Yes, sirs, we will help you carry them out." Instead, a united front of the Valley's seven land-grant colleges was organized and it said: "Here is our finding about the importance of phosphate and the enrichment of the soils of the Valley; and here is our finding as to how the farmers are going to be organized to try these things out. We hope that the Department of Agriculture will go along, but here we stand." When the Department of Agriculture had to go along and sign the agreement also, we felt it showed how great were the powers of the H. A. Morgan approach to the institutions of the Valley. Things of that sort.

Well, to get back to the broader and more sweeping question that you asked, the response of the people of the Valley to TVA was never, in my view, completely united, or whole-hearted. There was widespread support of TVA, but there were always a lot of people who (like the Knoxville Journal) said, "It's all malarky." But on the other hand, when I was there it seemed to me that the response was very, very encouraging. I don't think TVA would be here at all if it hadn't been.

DR. CRAWFORD: Did you have confidence at the beginning that TVA would succeed and become permanent? If not, when did you begin to feel that way?

MR. FERRIS: Well, the challenge was so great, so vague, so staggering at the beginning that one didn't let one's self ask that question, "Will it work?" One was so deeply involved in a struggle with such an obviously uncertain outcome, that one just didn't know. One hoped, but one didn't know. It is a hard question to answer, but when H. A. Morgan got the land-grant colleges and the U. S. Department of Agriculture together in an agreed joint program for demonstrating the use of fertilizers in the Valley, and when the TVA was able to stand up to the Washington bureaucracy and say, "Here we are, here



MR. FERRIS: we stand; let's work together," one got a feeling that the enterprise (Cont'd.)

might be permanent. And when one saw the power program succeeding, one felt that maybe TVA would be permanent. And then when the war came along, suddenly TVA became a great instrument in winning World War II; one had the feeling for very different reasons (not fundamental, in a way, but important nonetheless) that power was there. I don't mean the electric power. I mean the power of success. I suppose that sometime during World War II, maybe, my mind had gotten around to the idea that TVA would last a long time.

DR. CRAWFORD: When you first went there in 1933, did you not think of it as permanent? Did you foresee yourself returning to Wisconsin at some time?

MR. FERRIS: Well, don't forget that that was in the bottom of the depression, and people who were taking jobs, even very, very risky jobs, weren't really appreciating the risk. They were thinking, "This is the best thing to do among other things to do." With me, it was a very simple thing. "Would I rather do this or go back to the Oilgear Company and make machinery?" I could have done that. This, with all things considered, I preferred to do, even though the risk was enormously larger. There wasn't much risk in going back to the Oilgear Company, and there was a tremendous risk in this. But it just seemed like a much better way to spend one's life. The thinking at the bottom of the depression was very different from the thinking now. You didn't have much time to worry about career security.

DR. CRAWFORD: What really attracted you to this work? How would you sum that up? It obviously was not the financial consideration.

MR. FERRIS: No. Well, I had been for years rather unhappy in making machinery. I wanted to do something that seemed more worth doing. I had nothing against machinery. I was a pretty good mechanical engineer. I had been promoted and became Chief Engineer of my company and all of that.



MR. FERRIS: But the trouble was that it seemed to me that a lot of it was  
(Cont'd.)

just irrelevant to the big things the world had to wrestle with. The TVA program looked as if a fresh start would be taken in dealing with big problems instead of marginal problems, and it would be more fun to live that way.

DR. CRAWFORD: Did you find personal satisfaction in this work? Did you find what you had hoped to?

MR. FERRIS: Yes. Very much so. There were many frustrations in the very early days. We were wrestling with the problems of industry and agriculture. H. A. had built up a philosophical concept which he called "the companionship of industry and agriculture." It was assumed that TVA and associated institutions must find ways to implant a lot of new local industries around. TVA just didn't have the tools to do a great deal in that field. There were a lot of frustrations as various approaches were considered, none of which seemed to be quite adequate. But the TVA venture as a whole, in which we were immersed, and which clearly was a bit thing, got into our blood and we felt that being in it was a mighty important way to live.

DR. CRAWFORD: Did you feel that the balance between agriculture and industry in the Valley was corrected substantially in the time that you were with TVA?

MR. FERRIS: I don't think that we ever really knew. I think that we felt that we were grappling with a vital problem--this business of more industry in locations that people could work in without herding together in mighty masses in great metropolises--but we were never sure that the total affect of our work would change what was going to happen in the world anyway because of the forces of centralization. I don't even know what I think about the answer. I've been out of touch with TVA, as you probably know, for 17 years. I don't know the answer, now, and I didn't then. But certainly the effort was worthwhile.



MR. FERRIS: And the concept of an economy in which institutions served people (Cont'd.)

was advanced by TVA. Oh, yes, then there's another point that I wanted to make. One very confusing development was World War II. World War II, with its emphasis on all-out production and enormous concentration of electric power in the Valley, took away some of the opportunity to measure the results of the earlier efforts. Large electric furnace plants in West Tennessee--processing phosphate rock--Monsanto and others, were expanded. There followed the enormous expansion of aluminum production by Alcoa and Reynolds. The effect of electric power expansion in a way went counter to some of the fundamental philosophy of the early TVA; they confused the verdict. I don't suppose anybody will ever know what would have resulted from our plans for industrial de-centralization, for instance, if World War II hadn't occurred.

DR. CRAWFORD: How much of the industrial growth in the Valley do you attribute to TVA?

MR. FERRIS: In the mass, a very large part. Because some of the major industrial expansion in the aluminum industry, for instance, was strictly dependent on massive availability of cheap power. This industry was almost forced to expand in the Valley, although Alcoa was there before TVA existed. TVA power resulted in more aluminum manufacturing.

DR. CRAWFORD: Were you satisfied with the relation of TVA with industrialists in the Valley?

MR. FERRIS: No, that's a field in which our whole civilization is groping; the relationship between what you might call the framework of public interest on the one hand and massive business enterprise--free business enterprise--on the other. All that I can say is that I think it was making progress in the Valley, as contrasted with some other parts of the country, but I can't say



MR. FERRIS: I thought it was entirely satisfactory. You know, I'm feeling a little  
(Cont'd.)  
bit weary. I wonder if we can slow up for a few minutes.

DR. CRAWFORD: Certainly we can.







THIS IS INTERVIEW NUMBER THREE WITH MR. JOHN P. FERRIS, DECEMBER 7, 1969.

DR. CRAWFORD: Mr. Ferris, when you arrived in Tennessee, you were sent by Harcourt Morgan on a short tour to Bristol and south from there to Chattanooga. What did you learn, and what impressions did you form from the information gained on that trip?

MR. FERRIS: Well, nothing very specific. There were two main things. One was simply what the eastern part of the Tennessee Valley was like, theoretically and economically and so on; and second (this was of special interest to me in view of the fact that I had spent my life in industry) was that there was a considerable and varied industrial development--what it was like. Particularly interesting was the major industrial complex at Kingsport at the other end of the Valley. A generally diversified industrial city was Chattanooga, ranging all the way from the simple textile mills to technically advanced enterprises like Kreusi's Southern Ferro-Alloys plant in Chattanooga, and another in Kingsport. I was just a newcomer and had to real understanding of the Tennessee Valley at all. I got the general picture. I got what Dr. H. A. wanted me to have, and some sense of what kind of place it was. Of the country between the industrial cities, I don't suppose I learned anything new.

DR. CRAWFORD: How much organization did you find in TVA when you arrived?

MR. FERRIS: Zero. Well, they had just rented the New Sprinkle Building. A fellow named Ned Sayford, who I think was an engineer under A. E. Morgan, apparently was in charge of all sorts of administrative matters such as telling me that we didn't have any forms yet to fill out travel expenses on--travel vouchers--but that he'd take care of it when I got back from the trip. In July, I remember waiting for somebody in an office on Gay Street at the Chamber of Commerce of Knoxville, which they had lent to Dr. H. A.,

from the University  
of Memphis, Tennessee



MR. FERRIS: pending the time when TVA would have its own office space. Fairly (Cont'd.)

early, I can't remember just when, Carl Bock showed up. He was a senior engineer under A. E. Morgan. But the organization was very, very embryonic. Very early Neil Bass began to flank H. A. Morgan in his own meetings in his own living room, and things like that.

DR. CRAWFORD: What position did Neil Bass have at the start? Was it something like administrative assistant to H. A. Morgan?

MR. FERRIS: Something like that. I should say that there wasn't any distinct line between administrative assistant and general assistant. He was a kind of just plain assistant, but more or less on the administrative side. The three men that H. A. looked toward for substantive thinking were Woolrich in industry, McAmis in agriculture, and Harry Curtis in fertilizer.

DR. CRAWFORD: And who were the most important men under each of those three?

MR. FERRIS: Well, at first I was the only guy under Woolrich except for the research workers on some of the projects that I mentioned earlier--refrigeration, cotton seed processing, and so on--and in general, they didn't work for TVA yet. They were still University of Tennessee men. Under McAmis it was George Rommel, who was an agricultural statistician. I don't know what he was supposed to do exactly. As nearly as I can recall (although I'm not really sure about this), Curtis had established a relation with a chemical engineering teacher on the University staff named Boarts who stayed I think, full-time at the University but helped Curtis a little bit one way or another. What went on at the Shoals I don't know exactly; I'm pretty foggy about how the organization was set up there. Sometime, and it might have been a year or two after I got there, a fellow named Arthur Miller became Chief of the Chemical Engineering Department under Curtis. But I can't remember when Miller showed up.



DR. CRAWFORD: How separate was that from the Knoxville work? Was that supervised directly or was it given considerable latitude in operation?

MR. FERRIS: You are speaking now of the fertilizer plants at Muscle Shoals?

DR. CRAWFORD: Yes, sir.

MR. FERRIS: Well, at some time it was set up as a department--the Chemical Engineering Department. Its degree of independence from Knoxville was about the same as McAmis's group in agriculture or Woolrich's group in small industry. The only different was that it was 280 miles from Knoxville, and the distance gave it some independence. The enormous physical plants and the responsibility that was there--maintenance and custody and so on--gave it some independence. But organizationally, I don't suppose the Director of Chemical Engineering had any more independence of administrative control than McAmis did as Director of Agriculture.

DR. CRAWFORD: I know that the managerial personnel for TVA did fly down occasionally, or otherwise travel down to the tri-cities.

MR. FERRIS: A great deal, and especially in later years. In other words, by 1937 or so, I would say that the Chemical Engineering Department was under the same degree of administrative control as the Department of Agricultural Industries or any of them. But there were different kinds of work, different kinds of contacts, and the lack of any enormous physical plant under McAmis or Woolrich made the relationship somewhat different from the way it was in the case of the Chemical Engineering Department at Muscle Shoals.

DR. CRAWFORD: Working under Woolrich, what duties did you carry out through the early 1930's?



MR. FERRIS: During the early 1930's I did a good deal of work in trying to envisage solutions to the organizational problem of getting results of Woolrich's industrial research into use in such a way that it would encourage small industry. I made a study of the G. L. F. Corporation of Ithaca, New York, as I mentioned earlier, and reported it back. I cooked up schemes for getting some of the Washington New Deal money available for seed capital for those things, which didn't work out.

I worked on plans for a demonstration area that Dr. H. A. had in mind for Lincoln County, Tennessee and Limestone County, Alabama, where he hoped to arrange a fusion of agricultural and industrial demonstrations; it didn't come to much.

I worked up a plan for the use of TVA and university patent rights in quick-freezing and cotton-seed processing as levers for helping local businessmen get into quick-freezing and cotton seed processing industries. This worked out to a degree but didn't go very far, because we decided to try to concentrate our quick-freezing methods under farm cooperatives. Our TVA quick-freezing process was too sophisticated a system for farm cooperatives. In general, I went around under Woolrich trying to envisage ways of getting new enterprises started or old enterprises expanded to using some of the developments like feed-grinding equipment, dehydration of sweet potatoes, refrigeration lockers for local community stores, licensing arrangements under TVA's new quick-freezing processes, the University of Tennessee cotton-seed cooking processes, and so on. Woolrich left in 1936, and I became administrative head of that work.

DR. CRAWFORD: The Small Industries Division, was it then?

MR. FERRIS: It was called the Agricultural Industries Department.

DR. CRAWFORD: How long did you hold that position, Mr. Ferris, after '36?



MR. FERRIS: How long did I hold it?

DR. CRAWFORD: Yes.

MR. FERRIS: Until '39. Aldredge left, J. Haden Aldredge, who was head of the previous Commerce Department. He left to become a Commissioner on the Interstate Commerce Commission. At that time my department, Agricultural Industries, was merged with his Commerce Department, and we became a new Commerce Department that had responsibilities for river transportation, industrial economics, and minerals development work, in addition to the agricultural industries field that I had earlier had the responsibility for. The minerals had been under Aldredge, I think, and was thrown under me at that time, which was 1939, when Aldredge came to Washington.

DR. CRAWFORD: Do you feel that you were more successful in getting new industry into the area or in getting techniques changed by old, previously established industries?

MR. FERRIS: Well, in general it was the latter field. One of the basic, philosophical premises on which Dr. H. A. directed all of his work was that the Valley would be making a terrible mistake if it followed the Chamber of Commerce philosophy of bringing industry from the other places into the Valley. In the first place, there were 41 other U. S. states, and they wouldn't like the idea of seven U. S. states saying, "Why don't you fellows just give up your industry so that it can come here?" Of course, H. A. was quite right about that. He fought resolutely against saying: "Come and use our cheap power. Come and use our cheap labor. Come down here where we'll kiss you and embrace you," and so on. That whole approach was considered by him to be very unconstructive and self-defeating. Would you repeat your question? I've lost the question.



DR. CRAWFORD: Yes, sir. I wondered if you had had more success in getting new industries developed or persuading older industries to adopt new techniques.

MR. FERRIS: Well, the answer, as I said, was in the latter field. There was never at any time in the agricultural industries program of TVA, nor in the Commerce Department program, any effort to get any industry to move from some other part of the country to the Tennessee Valley. The problem was regarded from the other end as indigenous resource development and the strengthening of the existing institutions, including industry, through industrial research.

Now, as to success, I don't think that anybody will ever be able to measure such effects of TVA objectively. They were mixed in with national trends, and with the cheap power situations; the availability of large blocks of power at relatively favorable rates was a key factor. This opened opportunities for large new users like the phosphate rock processing plants in West Tennessee, and later the atomic energy plant at Oak Ridge, and so on. The exact causes of the industrial development which bloomed in the Tennessee Valley are hard to analyze. I don't think they have ever been fully analyzed. But in any case, the existence of several trends made the question of just what type of industry came about because of TVA's efforts very hard to answer.

One can say that over about a fifteen year period the per capital income of the Valley rose from about 40% of the national average to about 50 or 60% of the national average. A lot of that had to do with industrialization. But some of the industrialization that had come had come from expansion of old plants like that of the Southern Ferro-Alloys. Some was in new plants, such as the Monsanto Chemical Company's phosphate plant, the Wolverine Tube Company in Decatur, Alabama, etc. Expansion of the Aluminum Company plants at Alcoa was another. A lot of industrialization was in the form of various relatively small enterprises, such as feed grinding and mixing.



MR. FERRIS: These plants produced mixed feeds for the poultry business in the (Cont'd.)

Valley. I don't really believe that a convincing diagnosis of what happened and why has ever been written. But it's certainly true that industry, in general, expanded in the Valley and there was a considerable blossoming of both large and small industries.

DR. CRAWFORD: The TVA Board decided in the summer of 1933, to divide the responsibilities into three parts: one part to each of the three Directors. Do you feel that was well-apportioned? Do you feel that each Director received the responsibility best-suited to his ability?

MR. FERRIS: Well, I should think that my first comment on that is to look at your question a little differently. One of the implications of that decision was that the industrial sale of power and the negotiations with potential users of power, would be under Lilienthal, and the other was that the rest of the forces and operations that would have an affect on industrial expansion would be under the other two directors. Now, that part of the decision, I think, was probably wise and certainly inevitable. There was no way by which the massive power program could have carried on its negotiations with potential users of power, like the Monsanto Chemical Company and the Aluminum Company of America, except under the general direction of the people who administered this massive power program. It became one of the largest in America.

Now, as to TVA's other relationships with miscellaneous business-- with the agricultural industries, the existing textile plants, the quick-freezing plants, the freezer-storage plants, the freezer locker plants all over the Valley, etc.,--I don't think it really made too much difference how the responsibility was divided between A. E. Morgan and H. A. Morgan. It was an "everything else" category in which the actual economic developments which took



MR. FERRIS: place were a result of composite efforts such as improved agriculture, (Cont'd.)

industrial research, better community relations, and general encouragement towards higher morale among the businessmen of the Valley, and all that sort of thing.

In TVA's relationships with businesses other than those in the massive power sales program, I think that the forces under H. A. Morgan were probably more influential than those under A. E. Morgan, and that it was difficult to identify exactly what the business effects of A. E. Morgan were. Now, he had more to do with some definite things, like the establishment of a research station in Norris, Tennessee for the electrical processing of Valley clays for ceramic uses and other uses, which came out of his thinking. But, nevertheless, I think that in the picture as a whole, it was TVA as a whole, versus TVA's power program. I think that was the real basis of division of effort. In that division, TVA as a whole was a bit confused by the over-lap of responsibilities between A. E. Morgan and H. A. Morgan, but it nevertheless functioned fairly well. It's rather academic and unprofitable to try to draw a line between A. E. Morgan's responsibilities and H. A. Morgan's responsibilities.

DR. CRAWFORD: Do you feel that it would have been better to not make this division, but to have kept all of the powers under the complete board?

MR. FERRIS: No, it seems to me that the TVA's top problems were so complex in this program--so complicated--that the division into categories under the Board was probably a wise one. Because, trying to deal with everything at once would have created a confusion and an over-lap that would have been self-defeating. One can argue for a clear cut division, but I think that the actual division of industrial responsibilities between the Board members was probably acceptable.

DR. CRAWFORD: Do you believe that it would have helped to have had a General



DR. CRAWFORD: Manager at the beginning? I remember Jack Blandford later became (Cont'd.)

co-ordinator and then the General Manager as a reorganization procedure.

MR. FERRIS: No, I don't think that any General Manager at the beginning could have managed to focus energies affectively on all the things that had to be done; I think that the more constructive solution was to take general areas of high competence--like H. A.'s relationships--and say, "Let's build on that." And then to take Dave Lilienthal's competence in power and major political relationships with private power companies and with the federal agencies and say, "Let's build on that." I realize that one could argue to other conclusions. I happen to think that the thing that was done was all for the best.

You will recall that it wasn't too many years before the organization was pulled together under a General Manager, Jack Blandford. I think that this came at about the right time in the history of the organization. I'm not an expert on organization, and I don't pretend to be.

DR. CRAWFORD: Well, it seems to me that there was a great deal of energy present at the beginning with determination of people to get something done. You had people with diverse plans, and perhaps it was better to let them go their own ways.

MR. FERRIS: They got more done, I think.

DR. CRAWFORD: Than they would have under rigid, bureaucratic control at the beginning?

MR. FERRIS: That's what I think. A. E. Morgan had vision and competence to envisage a scheme of water control dams and confidence in figuring what you ought to do first and in figuring what you ought to do after that, and what kind of men you needed and who they were, all that sort of thing. I'm sure that the dam program turned out to be far ahead of where it would have been if he had had to carry H. A. and Dave Lilienthal along on every step.



MR. FERRIS: Similarly in power, Dave Lilienthal had ways of jumping intermediate (Cont'd.)

steps of thinking that he would have had to go through to bring the other two members of the Board along on every detail in the power program. H. A. Morgan was in a somewhat similar situation.

DR. CRAWFORD: All three directors were exceptional men. Why do you feel they were not able to work together effectively for a long period of time? I know that things started dividing rather early, and ended, of course, before the Congressional investigation.

MR. FERRIS: Well, it became apparent within a matter of months, at the most, that both H. A. Morgan and D. E. Lilienthal were simply going to have trouble with A. E. Morgan. I can't quote you things they said, but it's a matter of common knowledge that they sensed the impossibility of their getting along and really having an effective working basis with him, fairly early. As to why it happened, one can only philosophize. I think it was for the reason that I gave you earlier in this interview, the basically, A. E. had the feeling that the people handling the TVA were an elite, who were thinking ahead of the rest of the population, should think ahead of them, should formulate ideas and approaches and try to get people to come along with them and support them. But there was in this some fundamental lack of respect for the worth and ability of John Q. Public. It was an elitist approach to the whole development problem. Now, H. A. and Dave were very different from each other--entirely different--but they had one thing in common. They said, "This country is made up of ordinary people. Of course, there are a lot of people better educated than others and there are a lot of people who have had better fortune in life and know more and so on, but the problem of the people who are in the latter category, if they want to be effective as leaders, is to regard themselves more or less as tools of the masses and to help them think things through and



MR. FERRIS: to help them mobilize technology and so on." They wanted to leave the (Cont'd.)

basic power for advance in the hands of ordinary people--the Jeffersonian approach to living. H. A. and Dave were both Jeffersonians. What A. E. was, I don't know. But it was something very, very different, and that difference was so great that it was inevitable that sharp conflict would soon appear.

DR. CRAWFORD: Then did it seem to you to be more a conflict of issues than a personality conflict?

MR. FERRIS: Both. The personality conflict was the big thing. I'm not sure this should be in the record, but I'm going to put it in.

By the middle of 1936, the conflict had developed a long way, and the first thing we knew, A. E. Morgan went before the Board with a tightly organized dissent on two major points. He said that the fertilizer program shouldn't be concentrated in the Valley; that it was supposed to be nationwide. And second he said that the projects in the agricultural industries division were not legal--that they were stretching the law too far, getting into things like feed-grinders and quick-freezing plants and so on. He contended these programs were not legal, although, of course, the TVA lawyers had passed on all of them. The fact was that many of the agricultural industries projects had originated in thinking already started in the land-grant colleges of agriculture and engineering; some of them originated by TVA personnel had a good participatory basis and support. A. E. Morgan said that the whole program was simply illegal. "I realize," he said in his dissent, "that the lawyers have said that it is all legal. But it isn't." So, he threw down a gauntlet, sharply, in 1936. Now, I can't remember just when this was, but at one time in Norris, Tennessee, Secretary of Agriculture Wallace was delivering a speech on agricultural adjustment, or what have you, at Norris. A. E. Morgan chaired the



MR. FERRIS: meeting and introduced the Secretary. All during Wallace's speech, (Cont'd.)

A. E. Morgan sat there in a brown study. You could see that he wasn't paying a bit of attention to the speech. He was deep in thought about something.

After the meeting a lot of us went up to shake hands with the Secretary; to bask in the sunlight of his spiel a little bit and move on. While I was up there, A. E. Morgan said, "Ferris, I want to talk to you!" He paid no attention to Wallace at all, who was the speaker. He said, "You know, I think we ought to develop a new chair in the Valley. There has never been a chair with three legs. I think maybe we ought to develop a chair with three legs for manufacture in the Valley."

Well, my point isn't that maybe a chair with three legs wouldn't have been a good thing for some small local industry, but it was a damn funny thing for the man who had tried to pull the legal rug out from under the whole web of projects that H. A. Morgan and Woolrich had built up with very elaborate collaboration with the engineering colleges and agricultural experiment stations as being, philosophically, an important part of an enormous economic development research underpinning for a balanced economic development in the Valley, to say, "What you need is a three-legged chair, because I personally think so."

MRS. FERRIS: It was partly his wife's fault. She worshipped him like a God.

MR. FERRIS: Well, that isn't important. I don't imply that there is anything immoral about a three-legged chair, but I think it's a damn funny thing for a Director of an organization after two or three years as Chairman of the Board to think that developing fertilizer to get grass and wheat on hillsides to stop erosion is illegal, but a three-legged chair is lega. There was something a little bit odd about a state of mind that could produce results like that.



MR. FERRIS: Now, I don't want to attack A. E. Morgan, but you've been asking (Cont'd.)

me "What was the conflict?" Well, this certainly was not a great issue. The fact is, I forgot it, and he forgot it. I didn't go out and hire men to design a three-legged chair. I just quietly did nothing.

MRS. FERRIS: I didn't bash Mrs. Morgan over the head when she said, "Wouldn't you like to have a half-time maid, and let me have the other half? But, of course, if I wanted to entertain or anything, I would expect you to let her go, according to my needs." I think that Mrs. A. E. was somewhat peculiar, too, as Mr. A. E. was, but she did dote on her husband. I guess that is a good position.

DR. CRAWFORD: Men think it is good, anyway. (laughter)

MRS. FERRIS: I don't know. I think there are certain men who might think they were being spoiled under certain circumstances.

MR. FERRIS: Well, I don't know exactly what my broad point is, but generally speaking, it's this business of a purely personal appraisal of things being perfectly appropriate in the face of the combined thinking of two very able colleagues and a considerable organization of hard-working people who had done a good deal of thinking about what TVA was all about, what it should do, and what it shouldn't do.

DR. CRAWFORD: Well, I know that Arthur Morgan had a very creative mind.

MR. FERRIS: He did.

DR. CRAWFORD: And he dealt with ideas concerning industrial development, such as his plans for the Valley? Were any of them suitable for that?

MR. FERRIS: Well, as far as I was concerned, I don't recall others. I remember the ceramic development which was centered in a laboratory in Norris, Tennessee, which was ultimately turned over to U. S. Bureau of Mines and operated by them.



MR. FERRIS: As far as I know, it was relatively sound and the project was in its (Cont'd.)

later stages, well-carried on by the Bureau of Mines, but I am not personally aware of what, if anything--that any commercial development came out of it. But I do not say that none did. I suspect that a creative research project is an important industry of that scope probably had some actual applications and practices for the ceramic plants in the Valley somewhere. I don't know where they were.

We lived across the street from Hewett Wilson, who ran the laboratory for several years, and I never heard him tell me just what industrial uses were made of their work. But I'm sure there were some.

DR. CRAWFORD: Do you feel that all three directors had a rather similar broad view of the development of the Valley?

MR. FERRIS: Well, "similar" is the term that bothers me a little bit. H. A. Morgan always had the idea that business and industry in life had never really found their role. They had never properly related their operations to the fundamental ecological realities of agriculture and so on. He believed that there was much to be desired in the industries' relationship to the rest of the economy. Dave Lilienthal realized that, and I think he recognized the truth of it, but felt that realities were such that industries were going to have to go on exploiting resources, the way they had done, it was for quite a while before we came in America to a situation in which the role of industry was better adapted to the limitations of resources, and the desirability of decentralized locations and all that. In other words, Dave Lilienthal was a little more inclined than H. A. to be patient with the industries' adapting to fundamental ecological reality. But he didn't disagree with H. A. Morgan. It was more a matter of timing the application of H. A.'s philosophy, I think. A. E. Morgan never really understood. His mind struck like lightning in funny directions



MR. FERRIS: and unpredictably. I could never add it up to a coherent philosophy (Cont'd.)  
that I could understand.

DR. CRAWFORD: Did you feel that you could understand the aims of Dave Lilienthal and H. A. Morgan?

MR. FERRIS: Yes, pretty well. I knew them both fairly well personally. I knew them both better than I knew A. E. Morgan.

DR. CRAWFORD: What strength did you feel that each brought to the Board?

MR. FERRIS: Well, first let's start with my beloved H. A. In the first place he envisioned the role that agriculture had to play if you were going to have a sound society at all. He had a comprehensive vision of agriculture. He had a more specific technical vision of the role of plant foods--phosphates and lime and other plant foods--as a strategic tool in bringing about a sound agriculture. He had a vision of the impossibility of the Valley's realizing its agricultural and industrial destinies or potentialities, except, as the institutions that were the expression of the will of the people--their own taxes and their own leadership, participating fully and affirmatively--not just acquiescently. Those were absolutely priceless visions which he made Lilienthal, at least, grasp the importance of. He had a unique magic, a personal magic in enlisting people who weren't really philosophically liberal enough to buy this bill of goods to buy it anyway, because of the magic of his personality. I mean, like things of teaching Sunday School classes for twenty or thirty years because he could get at a few businessmen that you couldn't get at any other way. Things of that sort, and the humility that went with his willingness to work in these quiet, unspectacular ways. Then a sort of semi-religious vision of the role mankind has to play in the universe, not as a dictator, but as a participant. Those things were perhaps the core of his contributions. He was a prophet in quiet ways.



MR. FERRIS: You asked me about all three, didn't you?  
(Cont'd.)

DR. CRAWFORD: Yes, sir.

MR. FERRIS: Now, Dave Lilienthal has been, and is, a brilliant lawyer. He was imaginative and daring. But he always persuaded people to recognize realities. One of the realities that he tied back to was that electric power in the modern age was a key tool and that TVA's having control of a big block of it enabled us to undertake a tremendous task--to find out what electric power was good for in the Valley. Not just producing income, but producing social affects, and so on. He had an intellectual flexibility and curiosity that made him quickly grasp the idea of H. A. Morgan that one of the great destinies of electric power was to be a tool to help rebuilt the agriculture of an area that was pretty badly gutted agriculturally.

He had an open-mindedness about the importance of fertilizers and the agricultural program and the things that went with it--like our little industries program--that was imaginative and magnificent. And then he had of course, this great talent of saying things understandably; of interpreting what TVA was doing in speeches and in writings that would seem plausible to politicians and others who had the "yes and no" power over it all. His presentation of the TVA program to the public in his hundreds of speeches and in his writing of his book, TVA: Democracy on the March, was absolutely essential. Without these TVA couldn't have survived.

Now, A. E. Morgan I know less about, but I would credit him with at least two things. One is that he envisaged very well, as far as I know, the potentialities of harnessing the Tennessee River and its tributaries in an engineering way; proper balance between the storage and the run-of-the-river dams; the merits of force-account construction vs. contracting; and things of that sort.



MR. FERRIS: I don't know how far the latter was his contribution, but I assume it was; that if you did the job yourself with your own people, you realized certain values that you missed if some contractor did it. I assume that was right. I don't know.

And then early in the game he grasped the reality that you couldn't really do a demanding job like this if your personnel selection and promotion and control process was shot through with political skulduggery; if the control of employment and so on was part of a political reward system. Under such a system the work could not be done effectively. You had to have integrity in your personnel selection and so on. As I understand it, when Jim Farley, as Postmaster General, tried to get control over some or all of TVA's personnel decisions, A. E. Morgan laid down the gauntlet to Franklin Roosevelt and said, "It just won't be. I'm not going to do it that way. Period." And Roosevelt backed him, I think. I can't cite you the evidence, but it was my strong impression from what I learned when I was in the Valley that A. E. Morgan should be credited for carrying that battle to Roosevelt early in the game and winning it. We didn't have to try to run the TVA on a patronage basis. So I would say that A. E. Morgan's great contributions were in getting the engineering thing off to a good start and in making some damn good dams that will probably be there 500 years from now, and in laying the basis for the integrity of our personnel system.

DR. CRAWFORD: Can you explain his "common-mooring" idea?

MR. FERRIS: You mean H. A.'s?

DR. CRAWFORD: Yes, sir.

MR. FERRIS: Well, I would certainly like to have a day for it! Well, let me see.

I can tell you right now that nobody that I know of has ever done an adequate job of it.

DR. CRAWFORD: I had wondered how it could be summed up well.



MR. FERRIS: You are probably aware of the book that was written, aren't you?

DR. CRAWFORD: Which one, sir?

MR. FERRIS: Called "Our Common Mooring," I think.

DR. CRAWFORD: Yes.

MR. FERRIS: It's a little grey book about a half an inch thick. I think that H. A. Morgan and a fellow named Hartford wrote it. I didn't think it was so very good. This is a terribly hard question to tackle when I'm heading towards being tired. I was going to find a chart I had in here somewhere.

DR. CRAWFORD: Would you like to stop for a while, sir?

MR. FERRIS: Yes, I guess I would. Do you mind?

DR. CRAWFORD: No, not a bit.

#### PAUSE IN INTERVIEW

DR. CRAWFORD: Mr. Ferris, to start again, what, in your view, were the major accomplishments of TVA? What were the major actions in TVA in the latter part of the 1930's? Say from about 1936 through 1939?

MR. FERRIS: Before the war?

DR. CRAWFORD: Yes, sir.

MR. FERRIS: Well, I think the major accomplishments of the TVA in that pre-war period was a considerable turn-around in public morale, to a surprising extent. The farmers, the forest land operators, labor leaders, the river barge people, the town businessmen who were on municipal power boards--pretty near everybody, with exceptions, had more or less unconsciously come around to a feeling that this Valley was going up-hill, not down-hill; that things were going to get better; and that we could do something about our problems.

Now, it is very easy for a critic or a skeptic to point out that a lot of that was not due to TVA, that a lot of it was due to things like the New Deal



MR. FERRIS: Agricultural Adjustment Program which made it possible for some of the (Cont'd.)

cotton areas around Memphis to get out of cotton exclusively and begin to diversify more and so on. TVA can't claim credit for all of that. So, I can't prove how far TVA was responsible for this change-around, but in my opinion, (and that's what you're asking,) a man who visited the Valley in 1941 sensed that there was an amazing amount of forward motion and forward thinking. People were doing things that they hadn't thought they could do before, and the contrast between that and 1933--when a sixth of all the businesses on Gay Street, Knoxville were boarded up or closed or something--was quite striking. Now, that is intangible and unprovable, but it is my opinion. Foreign visitors seemed to sense this, although they had nothing to compare it with.

Another great accomplishment was that a beginning had been made in gearing in a lot of human activities into an ecological framework, which was, to a great extent, a monument to Dr. H. A. Morgan. That is, you found farmers who sensed that there was a social obligation in keeping the soil from running down the gulleys to the nearest river and from there into the Tennessee, and from there into the Mississippi, in addition to whatever individual value it had to them as farmers. And you found quite a lot of owners and operators in timberlands who were doing a lot about sustained yield forestry, which was in the general direction of a better ecology. And sensing that they were a part of the Valley team, the people were trying to make a better Valley. They were trying to gear in with the requirements of nature for a decent civilization in that area. You found more and more of that. You found thousands of test demonstration farmers who with winter crops were sensing a new relationship between their farms and their persons to the natural requirements of soil and the growth cycle and so on, paying some attention to ecology. I think TVA can be credited with something there. Quite a bit.



DR. CRAWFORD: By that time the agricultural program was improved and certainly the picture was improved with regard to forest land. What about the industrial situation by the late thirties?

MR. FERRIS: That is more difficult to appraise. Let's take one extreme of the very local business that is a necessary tool for better ecology on the farm. You will recall that cover crops imply raising of livestock, and raising livestock implies a market for livestock and so on. Well, by the time World War II rolled around there were probably a couple of hundred of freezer locker plants in the Valley in which farmers could take their newly slaughtered meat and hold it until they wanted to use it or sell it locally; they were able to preserve crops other than corn and cotton. Little crops from truck gardening or what-not. That was a beginning of the role of industry or business as a tool of ecology without which the farm ecology could only go so far. There was a break-through just in the uses of using refrigeration for holding and marketing crops, which had made quite a beginning by the time World War II came around. Then, of course, you had the major operations of the industrial people like Monsanto in West Tennessee. There were two or three others whose names I have forgotten, who were consciously making and concentrating phosphorus products for us in concentrated phosphorus fertilizers which the agriculturalists said were necessary to the decent ecology of the farming ecology. When the TVA started, everybody said, "All you can sell a farmer is a mixed fertilizer in which the mineral contents are highly dilute, because that is what a farmer is used to and he won't pay more than so much a sack, etc. Well, the thousands of demonstrations of concentrated phosphates on the test demonstration farms in the Valley program--not just a TVA program, but one involving the land-grant colleges and so on--had convinced



MR. FERRIS: a lot of businesses in the phosphorus industry, like Monsanto,  
(Cont'd.)

that there was something more there. There was an opportunity for the industrial operation in concentrating the phosphates to help build a sound agricultural ecology. This happened all over the country, not just in the Valley. It was nation-wide.

From there on the picture is rather mixed. The contribution of industry and its expansion was perhaps most identifiable as an employer of labor which would have otherwise been forced to flee the area and go to Akron or Detroit and seek industrial jobs in the great metropolises of the North and the Mid-West, and also in Birmingham and Atlanta and so on. But the industrial contribution was important in that it did minimize the outflow of population to distant areas and the disconnection of people from their backgrounds and so on in the region. And it was important in building up the per capita income of the Valley. The per capita income rose pretty rapidly. Even by 1941, there was a very considerable increase, a lot of which, of course, was due to the fact that there were more industrial jobs. Local industries were paying a little more than they used to and going into new things. Like the Wolverine Tube Company at Decatur, Alabama. I don't remember whether that plant was there before the war or not. But I think it's almost impossible to say exactly what the contributions of TVA to industrial development were. There were several cotton seed oil plants that were using a more efficient process that had been developed by University of Tennessee Experiment Stations and TVA. Not many, but some. They were getting more of a return from the cotton seed because of a more efficient oil extraction. There was a good deal of feed mixing where there was a better job being done in mixing local feeds with the cheaper grain that was hauled in by river



MR. FERRIS: navigation from the Mid-West for the poultry industry. But a lot (Cont'd.)  
of the industry was rather disconnected from any local ties. It was like the Aluminum Company at Alcoa where you simply made more aluminum. The ore came from either Arkansas or South America. Its main contribution was more jobs in the Valley. But I would think that the general judgment of critics of TVA is that the enterprise as a whole strengthened the industrial economy of the area.

DR. CRAWFORD: TVA had a crisis, or at least a difficult period, with the Congressional investigation.

MR. FERRIS: '38.

DR. CRAWFORD: Yes, sir. In which you had part in testifying and preparing for, certainly. Can you tell me something about the development of that Congressional investigation? The events leading up to it?

MR. FERRIS: Well, I think it was a rather illogical sort of thing, but there was some mineral interest in East Tennessee in which TVA had either been involved in buying some land with mineral deposit on it, or affecting the transaction in some way.

DR. CRAWFORD: Perhaps that was the Berry Marble Case.

MR. FERRIS: Berry Marble Case! It was the Berry Marble Case. Well, somehow A. E. Morgan conceived the idea that Dave Lilienthal and H. A. Morgan had had a nefarious, behind-the-scenes part in that that was contrary to public interest. Now, I don't remember the details of it at all, except that it was nonsense. The other members of the Board hadn't done anything wrong at all. But, A. E. thought they had, and somehow, the Congressional Investigation spotlighted the Berry Marble Case in a way that was slightly ridiculous, because it wasn't anything



MR. FERRIS: much. But, my impression (and I don't really know the answer to your (Cont'd.) question) is that the enemies of TVA in Congress were looking for an opportunity to stage an investigation of TVA and see what they could dig up. When the Berry Marble Case came up, it looked like a perfectly good excuse, so they made an investigation. But I'm not giving you chapter and verse, because what little I recall is of events long past. I don't really know the background of that investigation. It was a good thing for TVA, I'm sure of that.

DR. CRAWFORD: Was the Berry Marble Case the thing that led to the Congressional investigation?

MR. FERRIS: You're asking me whether it led to it?

DR. CRAWFORD: Yes, sir.

MR. FERRIS: I'm not sure. I think so, but I'm not sure.

DR. CRAWFORD: But the investigation itself was a much broader hearing, wasn't it?

MR. FERRIS: Oh, it went across the Board. It looked into the fertilizer program. It looked into everything.

DR. CRAWFORD: Can you tell me something of how it was conducted? How it affected TVA operations?

MR. FERRIS: Well, as far as I saw, it affected us very favorably. It forced all of us to articulate our thinking in rational form--concise, merchantable form. Certainly that was true of the Agricultural Industries program, which I had the responsibility of defending. When the investigation started, it was anticipated that we would come up for a grilling, and somebody told me to get busy and get my thoughts in order. Of course, the Legal Department had the responsibility, I guess, for co-ordinating the preparation of testimony. I don't remember. But, in any case, for months and months there we were grinding out fairly concise papers (A) as to what we had done, and (B) as to why we had done it, and (C) as to how it exactly related to TVA's basic legal



MR. FERRIS: responsibilities under sections 5, 10, and 22, as far as our (Cont'd.)

Agricultural Industries program was concerned.

So by the time I was called on the witness stand, we were loaded with the best thinking that any of us had been able to do, and that had been very good for us. It organized our thinking.

DR. CRAWFORD: Were all department heads prepared, as you were, for this hearing?

MR. FERRIS: I assume so, but I do not know. I can't imagine that they weren't, but I can't recall much outside of our department. I remember that they beat at Curtis for something or other, but I'm sure he was prepared. Curtis was the Director of the Chemical Engineering Department at the time.

The hearing was held in a federal court room in the post office in Knoxville. Biddle, who became at one time U. S. Attorney General, coordinated the hearings--Francis Biddle.

He was the administrative officer for the congressional investigation. He didn't play a very prominent role. He seemed to be leaving it to the Congressmen, mainly. I would imagine that he kept everything woven together, probably.

DR. CRAWFORD: What do you remember of the hearings themselves?

MR. FERRIS: Well, mainly my own day. I remember that my bete noire was Congressman Wolverton of New Jersey, who was a Republican and a good lawyer. He was merely trying to see what hay he could make for the enemies of TVA. As far as I could tell, he was doing a creditable job in that respect. He was an ingenious lawyer. All he did, essentially, was to question me on what we were doing and why we were doing it. It was perfectly reasonable. It was not a very pleasant experience, because he was a trial lawyer and rather skilled in baiting the witness. He tried to bait me a good bit, but



MR. FERRIS: I don't know, I guess I did fairly well. But at any rate, I remember (Cont'd.)

that I ran into an area of ignorance on his part that worked to my advantage.

I remember at one point I knew a little bit about patent law because of my experience in the Oilgear Company in Milwaukee where I had taken out a lot of patents and dealt with patent attorneys. This is kind of silly to tell, but at any rate, in the case of the patents on the cotton seed processing, which we had worked on in the Agricultural Industries Department he asked me whether we had, in effect, cheated by permitting the University of Tennessee to patent our inventions. All I had to say was, "Why, Mr. Wolverton, the patent laws of the United States require that only an inventor can patent an invention. He can assign the patent to somebody else, but you can't let somebody else patent your invention, according to the law." Well, he was a good lawyer, and I wasn't a lawyer, but he didn't know a damn thing about patent laws. So I got a little advantage over him temporarily, which was amusing but of no significance.

DR. CRAWFORD: After the hearings ended, did the operation of TVA continue much as before, or were there changes?

MR. FERRIS: I remember no changes.

DR. CRAWFORD: The next major change, then, was World War II?

MR. FERRIS: World War II.

DR. CRAWFORD: Could you explain something about the affect of World War II on the Authority?

MR. FERRIS: Well, there were three things that I remember. One was a hurry-up in the designing and building of dams which would produce power fast. Douglas Dam, particularly, and then later, I guess, Cherokee and then Fontana.



MR. FERRIS: The idea was that the authorities over war production in Washington (Cont'd.)

could see that they could get large blocks of power to enormously expand aluminum production faster by helping us build dams on a hurry-up schedule than they could in some other ways. Why that was, I do not know. It was evidently true, and the war production authorities in Washington turned us loose to build dams like hotcakes. As I recall it, we built Douglas Dam in perhaps fifteen months--an incredible schedule. That was better than anybody had ever done. The problem was simply to get power so that you could make more aluminum in a hurry at the aluminum company at Alcoa and elsewhere. That was a dramatic affect on TVA because it resulted in hard-driving, terrible schedules of work and all kinds of tricks like playing music so that the workers would feel better and work harder on Fontana Dam. There were all kinds of crazy things done. But that was one affect that we felt.

The War Production Board and all the authorities in Washington seemed to think that TVA did a tremendous job on that forced construction on dams. And incidentally, all the dams built were dams that were needed anyway in the system, so there wasn't any real distortion on the water-control program. It was mainly a matter of hurry-up action.

Then there was a scrambling around to use and amend our collateral activities in ways that would help the war effort. I remember in our Commerce Department, which I was then Director of, there was a tremendous effort to see how fast we could re-direct some of our industrial research work with strawberry growers to ship out more processed strawberries, using a quick method of preservation by sulphur dioxide. The object was to ship them to England for strawberry jam, which Englishmen liked to eat, during the war. Here we were using a sulphur dioxide treatment to preserve the strawberries and get them across to England.



MR. FERRIS: Well, all kinds of things went on like that to try to find some (Cont'd.)

activity in the resource development program of TVA that would help. In river navigation, for instance, we were fixing up freight handling arrangements at four river ports. At Chattanooga we unloaded jeeps, which were taken to army camps in the South. That involved constructing some special equipment at the river terminal in Chattanooga; this was sort of a collateral program to our regular activity in river traffic development, you see. But it was there because of the need of the army for jeeps, and they were barged down the river instead of having them driven on the roads. There were all kinds of little things like that. I assume there were war activities in forestry, also, although I don't recall what, if any, activities in forestry were redirected to help contribute to the war production effort. But throughout TVA there was a sort of shading of activities this way and that way to try to make them gear in to the national production effort for war. Some new furnaces were set up at Muscle Shoals to make something or other that I don't think we made before. I can't remember what it was; it might have been calcium carbide.

Now, that leads to the third major shake-up in TVA during the war. It seems to me that this is the one that had the most far-reaching consequences; getting ready to produce a tremendous amount of power for the atomic energy program at Oak Ridge and Paducah, Kentucky. The amounts were very, very great. I can't tell you the figures, but if I'm not mistaken they were somewhere between 200,000 and 400,000 kilowatts just at Oak Ridge. That was one-third as much as the whole Valley produced when we came there in 1933, or something like that. Very large amounts of power resulted in this frantic expansion of the power program, not just from more generators at dams, but



MR. FERRIS: also from steam plants; the Watts Bar steam plant, and then another (Cont'd.) steam plant, Johnsonville, and so on. The dates I can't remember exactly, but there is no question about the fundamental fact that the atomic energy program in its tremendous demand for power produced such an expansion of power in TVA's program, that the first thing you knew power was no longer a by-product of an ecologically balanced control of the water in the river system; rather, the additional power stacked on top of that made the whole thing top-heavy in power. What is going to happen if we get a strategic arms limitation treaty with the Russians and we don't need this power to produce endless stockpiles of bombs, I don't know. But in any case, events made obsolete a concept of TVA in which, on the river, you control the water to control floods and to provide the navigatable channel to Knoxville, and you pick up power as a sort of balanced by-product--one aspect of the control of water. It made this theory look a little bit phony. And people began to think more and more of the power as a thing in itself. The relation with the river became a little bit tenuous and seemed to me a little less than real.

DR. CRAWFORD: Doyou believe this imbalance continued long after the wartime period?

MR. FERRIS: I don't know. I do, yes, because every once in a while I read of some big new steam plant being built in TVA. Every steam plant they build exaggerates that problem. I don't say this is wrong, you understand; I just say that it takes the TVA another step away from its basic ecological underpinning of philosophy and concept.

DR. CRAWFORD: I suppose the nuclear plants will have the same affect, won't they?

MR. FERRIS: Sure, the original concept of TVA in the laws of the TVA Act in which the Supreme Court passed in the Ashwander Case and so on, was clearly expressed: the problem was, "What do you do with the energy that you might just as well pick up with a little extra investment if you impound water



MR. FERRIS: and control floods and make a navigatable channel?" Well, when you (Cont'd.)

have got the Valley peppered with nuclear and steam plants that concept is an interesting piece of history. It is no longer completely valid, and the intellectual appeal of energy being a tool that you can just as well pick up by doing an ecological job on water and land becomes not phony, exactly, but well, it becomes an historical analysis that has been to some extent passed by. I don't say that it is wrong, but it has changed the nature of TVA.

DR. CRAWFORD: I believe that this is a subtle difference in development that has been over-looked in the direction of the development of TVA. This was an expansion, wasn't it, of the part supervised by David Lilienthal--the power program. Did it involve a diminishing of Harcourt Morgan's ecological balance?

MR. FERRIS: Only in the sense that I just mentioned. As far as I am concerned there wasn't any decision that David Lilienthal made that created difficulties for Harcourt Morgan's philosophy of economic balance. The first step was a somewhat limited exaggeration of the power aspect of TVA in the forced building of Cherokee and Douglas and Fontana during the war to try to get large chunks of power for just one thing--aluminum to build airplanes. But that was minor compared to this business of the atomic bomb and the uranium separation at Oak Ridge. Now, Dave Lilienthal didn't decide that, nor did the TVA Board.

DR. CRAWFORD: That was a by-product of the war, wasn't it?

MR. FERRIS: That was a by-product of the war. It was a situation that I don't think anybody could have foreseen. I think it was a rather strange thing that it happened at all. I would have thought that in the whole United States there might have been a better place to create that enormous block of power, but here it was.

DR. CRAWFORD: Why do you suppose the Tennessee Valley was selected for it?



MR. FERRIS: I was in a little on that. Not in the thinking about it, but before the Oak Ridge location was determined upon and before the Manhattan project at Oak Ridge was set up, they had some people working on it under the name of Standard Oil Development Corporation, which was a phony name. Among the people working on it was one of a famous bunch of brothers that got into forestry and science. One of them was with Washington University in St. Louis. Compton. There were four or five famous brothers, and one of them was prominent at Washington University. Is that the correct name, in St. Louis?

DR. CRAWFORD: That sounds right, sir.

MR. FERRIS: Washington University. Well, he was a scientist, and the Standard Oil Development Corporation got him to work in helping to find a place for this uranium separation plant. Then they set up some kind of relationship with the Army of Engineers' General Groves and Colonel Nichols before the Manhattan Project was set up. They came around in the Valley and started looking for locations.

Some of them, including Compton, got me in a car and took me out to Oak Ridge. They were looking for locations. We had a catalogue in our industrial economics file of fifteen or twenty major industrial site possibilities. These were throughout the Valley, including the one at Oak Ridge, which was finally used. I took them out there. They didn't take down their hair to me. They were merely getting maps and data and so on from me about the industrial locations.

But I got the impression in talking to them that one of the things they wanted was isolation. They were thinking of secrecy. As you know, there was an amazing success in maintaining the secrecy of the project at Oak Ridge during the war. It was unbelievable. It was a city of some 75,000, and nobody



MR. FERRIS: knew about it! Well, they seemed to be looking for a place that was (Cont'd.)

out of sight, and yet, they wanted enormous blocks of power and they wanted a certain amount of cooling water, as I remember, but not too much.

DR. CRAWFORD: What about the labor supply? Did they need that?

MR. FERRIS: Yes, but they seemed to be more relaxed about that. They had an idea that they weren't going to use very much labor, I think. But at any rate, I got the impression (to answer your question) that one of the real reasons that they put their finger on that Oak Ridge site was that they wanted to be out of sight, and yet near a university community. They wanted to be sort of hidden from the world, and yet where they could get good rail transportation. They didn't need much rail transportation, because they didn't have much to haul, and massive blocks of electric power, which they did get and use.

DR. CRAWFORD: Why had you selected Oak Ridge as an industrial development location?

MR. FERRIS: There was a large area of flat land there. It was on the L. & N. railroad. It had possibilities for future river transportation. There was an untapped labor supply in the counties around there. It wasn't regarded as a particularly promising site, but you could get ten thousand acres of relatively flat land therein the Clinch River Valley if you wanted it. There were branch valleys, and that appealed to them. I was amazed when they began to say that they were happy that the flatland was interrupted here and there with high stone ridges. That puzzled me. I wondered what they were after.

DR. CRAWFORD: They wanted shielding, perhaps, in case of an accident?

MR. FERRIS: Yes. I don't think they ever used it, but that's what they had in mind. This is neither here nor there, but one of those things that happened on that venture when I was showing them around the Oak Ridge site was that



MR. FERRIS: Compton asked me about the temperature of the water. I gave him (Cont'd.)

the data during the year, which I had gotten from our engineers, of course. And I heard him say to one of his associates something about how much the temperature of the water would be increased by the operation and the cooling. I knew what the average flow was. I multiplied the two and got a figure for energy. The energy that would be released by the rising temperature of the water was greater than the energy that they were asking about for electric power. So, I said to myself, "Wait a minute here. There's something funny about this." Anyway, I made a personal guess, which I never told anybody about until 1943, when the plant was well-known, that maybe this had something to do with the splitting of the atom. Years later I heard that, at the time, the plan was to have major atomic piles at Oak Ridge, which would have released a great deal of heat; and that these were, in fact, not built at Oak Ridge but somewhere else.

DR. CRAWFORD: When did you find out really what was going on there?

MR. FERRIS: I don't remember. We lived near it in Norris. My wife and I moved to Norris and we lived near it for many, many years. I knew a tremendous war project was under way and I suspected about what was going on, of course. But as to definite information, I don't know. The newspaper had nothing about it. Even the Clinton Courier, right next door to it, never printed a line about it. And they would suppress news. If a thousand people came up there, you would never hear about the thousand people, and things like that. And the Knoxville papers, even the Journal, never seemed to print a thing about it. But darned if I can remember. I just don't know. I doubt if we really knew what was going on over there until 1945 when the press releases came out about the explosions in Alamogordo, New Mexico.



DR. CRAWFORD: That was a large government undertaking--planning a new community. There have been very few precedents. Did they use any of your experiments in developing Norris to guide them in setting up Oak Ridge?

MR. FERRIS: I don't remember. I don't think so, much. It was on an enormously greater scale. Norris was just a little eye-dropper thing, you know. There were only 1400 inhabitants. Oak Ridge was very large.

DR. CRAWFORD: Yes, I was at Norris a few weeks ago to interview Richard Kilbourne.

MR. FERRIS: Kilbourne! Yes, I know Kilbourne. Well, I can't tell you when we first knew about the role of Oak Ridge, but all I'm sure of is that there was still some uncertainty when the news accounts broke about the first explosions at Alamagordo. Then we were sure.

DR. CRAWFORD: After the war ended, the power program was much greater. Were there any attempts to bring the other parts of TVA up to equivalent development?

MR. FERRIS: I would say no; that we knew that Congress wasn't thinking that way. The fact is, in the late forties and early fifties there was evidence that Congress wanted to slash resource development in TVA considerably.

DR. CRAWFORD: Do you suppose that was because of the absence of Franklin Roosevelt? The absence of his support for TVA?

MR. FERRIS: Oh, I don't know. It was the tide of opinion in America. I think the American public was a little tired of hearing about idealistic schemes and development. The whole National Resource Planning Board idea had sort of come and gone from the national scene. The word "planning" was regarded as a little bit foggy and discredited. The public had gotten tired of paying high taxes during the war. Anything that consumed taxes and didn't produce an obvious benefit was a little under suspicion, I think. Then, as I recall it, let me see, when was the famous 80th Congress elected? I think it was the time Harry Truman went in. Didn't he have a Republican Congress in 1948?



DR. CRAWFORD: Yes, sir. A "Do Nothing Congress" supposedly.

MR. FERRIS: A "Do Nothing Congress." Well, that Congress, as I recall it, was Republican, wasn't it?

DR. CRAWFORD: Yes, sir.

MR. FERRIS: And I think that one of the general trends of that Congress was to frown on idealistic schemes, and it turned against the resource development programs in TVA. That's one reason they reorganized TVA in 1948 and eliminated the Commerce Department, of which I was Director. I was named Manager of a new office of Reservoir and Community Relations. The changes were, I think, intended to be better adapted to the Congressional mood than the previous organization. I don't recall any drive to strengthen the resource development side in TVA so that it would catch up with the power program.

DR. CRAWFORD: What did you think of the development? Or what did you think, rather, of the reorganization in 1948?

MR. FERRIS:= Well, it was in some ways a rather reasonable thing. However, I came to feel that the organization was mistaken in the first place. When they asked me to head the new office in 1948, I was quite skeptical and I wasn't too happy about it. One idea involved was that TVA would try to group into a working team the Department of Health and Safety, which had technical responsibility for the malaria control program, and employee health and so on, with the Department of Reservoir Properties. The latter was quite an extensive organization, with operating responsibilities in malaria control and in TVA properties management along ten thousand miles of shoreline. It was responsible for all of the licensing of lands which TVA owned along the shoreline, and for the general direction of the recreational program on some of those lands. In the same grouping was the Department of Regional Studies, which had relationships with the



MR. FERRIS: city planning commissions and the state planning commissions, and (Cont'd.)

which conducted TVA's research in the social sciences, including government studies and industrial economics. It had seemed to me a somewhat incompatible grouping; I couldn't see quite how the reservoirs--the shorelines--tied that variety of functions together. I wasn't too happy about it, but when they said, "Will you do it?" I said to myself, "Well, if I say no, they'll find a person that will do it, and so I had better try." Maybe they're right. But I think they were wrong. I do think it was a mistake.

DR. CRAWFORD: How much longer did you remain with TVA before leaving?

MR. FERRIS: A little over three years. Three-and-a-half years.

DR. CRAWFORD: Did you leave in '52?

MR. FERRIS: I left in '51. Well, it depends on what you mean by leaving. In effect, I left in '51. In the fall of '51 I started coming up to Washington and finding out what I was supposed to do on the mission to India in which I was to be a second man. No, the second was a man from the State Department; I was to be third. The second man was temporary. But I was actually on the TVA payroll until somewhere along in April or May of 1952. I was on loan to the Technical Cooperation Administration, which was a part of the State Department.

DR. CRAWFORD: At the time that you left TVA, what was the state of development? Were you generally satisfied with your accomplishments of the last twenty-some years, or nearly twenty years?

MR. FERRIS: Do you mean in TVA?

DR. CRAWFORD: Yes.

MR. FERRIS: Yes, on the whole. I had the feeling that it was a very, very rewarding eighteen year adventure. I wouldn't have given up any of it for anything. I was a little unhappy because in the field of industrial development



MR. FERRIS: you never could measure how effective what you did was as compared (Cont'd.)

with things that would have happened anyway. There were things that were caused by other forces like the war.

DR. CRAWFORD: Did you feel that the most rewarding part of it was your first part--the first ten years? Through the 1930's?

MR. FERRIS: Well, I would say no. I would say that perhaps the most rewarding part of it was when I headed the Commerce Department in '39 through '47.

That department had consistent inter-relationships between its various parts and things were moving pretty well in many ways.

DR. CRAWFORD: What were the major divisions of the Commerce Department? How well did it work?

MR. FERRIS: Well, the major divisions of the Commerce Department were Agricultural Engineering, Regional Products Research, and Industrial Economics.

DR. CRAWFORD: Did you have a capable staff in each part?

MR. FERRIS: Yes, I had a capable staff. I had some serious personnel problems with one key member of the staff who had character and personal troubles that resulted in our having to replace him in spite of the fact that he was very able. But on the whole, the staff was a good staff and the morale was high, and I think we accomplished a good deal.

DR. CRAWFORD: Who were your most capable staff members?

MR. FERRIS: In the Commerce Department?

DR. CRAWFORD: Yes, sir.

MR. FERRIS: Well, I would say that the most capable, everything considered, were A. D. Spottswood, who was Chief of the Industrial Economics Division and ultimately joined the staff of the International Bank for Reconstruction and Development; Clarence Hurd, who was head of the Agricultural Engineering



MR. FERRIS: Development Division; and the other man, whose technical performance (Cont'd.)

was good but who gave me personal troubles, was R. B. Taylor, Head of the Regional Products Research Division. When he left, he was replaced by Harry Vaughan, whom we got from Georgia Tech. He had been in charge of the Engineering Experiment Station work at Georgia Tech.

DR. CRAWFORD: Can you sum up something of your career since leaving TVA, just for the record, Mr. Ferris?

MR. FERRIS: Well, I spent from late '51 until early '56 with the problems of foreign aid developments in South Asia. From 1955 until 1956, I was Director of the South Asia Division of the International Cooperation Administration. My first work was India only. Then it became India plus Nepal. Later, Afghanistan and Pakistan were added. And in general all the foreign aid work was carried out in a two-part organization where the one kind of activity is carried on by the mission director in the country in which an aid program is under way and the other part is in Washington. Both parts are somewhere near equally important.

Neither one can do the other fellow's job. It's a two-headed thing in every case. After April 1952, I was always on the Washington end of it, but a great deal of tripping was to see how the work was going on in the field and to help deal with troubles. We had an important program in India, which is quite a place--about 500 million people now, a population greater than the United States plus the Soviet Union put together--and the program hasn't been discredited yet. In other words, even now while some significant changes in the aid program are being made, the general nature and contents of the aid program in India have met the test of time. I had great satisfaction in being a member of the original team in New Delhi that negotiated this aid program. I had



MR. FERRIS: great satisfaction in finding that we could respect the responsibilities (Cont'd.)

of the local organization in the Planning Commission of the Government of India, and the various ministries, and devise a program which in many ways had parallels with the TVA program. Not the content, but the method, as a voluntary relationship between the United States government and the Indian government in which decision were genuinely joint decision and not imposed by the United States. This approach worked out quite well in India.

They had a damn good Civil Service in the central government. In spite of it being utterly inadequate in numbers, it was of quite high quality. Over the years I've always been proud of the fact that in spite of much bitter dislike of India in the U. S.--especially under Nehru with his "neutralism" and so on--the essential features of that program have stood up. They haven't been discredited, as some of the aid work in other countries has.

Then, pretty soon I was asked to take on the U. S. aid program in Nepal. I went out to Nepal; an entirely different program had been started there in this very small country--about the size of Tennessee. It was an extremely isolated place with--at that time--only a DC 3 air connection with India. Four-fifths of its roads were around the capital in an area about as big as the county I live in. That program had done fairly well. Before long, Nepal's policies became uncertain; their government felt alarmed and overshadowed by their relationships with Communist China. They have gone pretty heavily for reliance on Communist Chinese aid with their road building and some of their other projects. The U. S.-Nepal program was useful. Thereafter I was placed in the South Asia division job; and I was made Chief of the South Asia division, which embraced Afghanistan also. There the program went pretty well, on the whole, And Pakistan. Pakistan went well, except that the government



MR. FERRIS: has since become a military dictatorship. But the economic side of (Cont'd.)  
their program went well. They've improved their food production dramatically, and have done a great deal in industrial development and have also used technical aid from the Ford Foundation as a private advisor group very well.

In 1954, Harold Stassen fired my major assistant, and I never really found out exactly why. At any rate, he was an unusually able man, and I was left over-loaded. I was getting by because I had an able assistant.

DR. CRAWFORD: Who was your assistant, sir?

MR. FERRIS: George Dolgin. I never found out exactly what it was all about, but everybody agreed that it was very, very wrong. Ultimately the White House, in effect, countermanded the action and instructed the State Department to put him on as Foreign Service Officer, where he is now. He has done very well.

But I was over-loaded. I had these large South Asia programs in Pakistan and India--India with 500 million people. I became terribly over-loaded, and then, about the time I wondered how I could get by, we had a new director, and he fired my second assistant, a fellow named James Davis. Rather, he didn't fire him. He took him away from me and sent him to Africa on some other assignment as punishment for some independent action that I think Davis was probably right about.

DR. CRAWFORD: Who was the new director then, after Stassen?

MR. FERRIS: John Hollister, a former Congressman. Well, Hollister left me naked with the South Asia responsibilities on my hands. I found myself sick. It was too much, with these personnel actions. You know, you can't just reach out and grab anybody for jobs of this sort. The work was very much like that in TVA programs, only enormously larger and farther away, and involving different civilizations and different customs.



MR. FERRIS: So I asked for a different job, and became the Special Assistant  
(Cont'd.)

to Cedric Seager the Regional Director for South Asia and the Near East.

The work involved less administrative burden. It consisted of building up the economic side of the program of the Central Treaty Organization. There were to be joint projects involving Turkey, Iran, and Pakistan. Ultimately, such things as the tele-communications link between Ankara, Teheran, and Karachi, and a whole series of technical assistance projects were worked out in collaboration with the Economic Committee in the Central Treaty Organization. I got a lot of satisfaction out of that, and there wasn't the administrative burden of the massive Asian programs. We had a field co-ordinator for the economic projects of the Central Treaty Organization, stationed in the area. I did the work in Washington very happily for about five years. Then, in 1961, I made up my mind to retire. I had been working for 41 years.

DR. CRAWFORD: And you've been retired since then?

MR. FERRIS: Well, since March, 1962. That was when I actually retired.

DR. CRAWFORD: Thank you very much, Mr. Ferris, for the recollection of TVA and your other experiences.











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